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Industrial Hygiene

We have recently been studying an American book on Industrial Hygiene and Toxicology—a study still unfinished—and one outstanding memory is a statement by a British factory inspector that there is need in this country for an institute specially devoted to this subject. It seems that whilst we have medical men on the staffs of the larger concerns and engineers engaged upon the production of hygienic plant, there is, we are told, no common meeting ground. Yet there are so many institutes in this country that it is hard to believe that not one of them provides the necessary forum. However, be that as it may, we have been impressed by the notion that the medical fraternity does not enter into any industrial good housekeeping system until something goes wrong. It is a sort of preventive medicine that seems to be required, or at least that the fundamental data should be available. At the moment, foundry engineers are engaged upon dust extracting propositions, ventilating and lighting problems, and, following the tenets of their profession they are no doubt allowing their usual factors of safety. In medicine, we are given to understand, correct dosage is a *sine qua non*, so, too, in industrial hygiene. Thus, excessive ventilation may cause ills of a more virulent nature than a stuffy atmosphere, or excessive illumination may give rise to "glare," whilst too diligent an attempt at dust extraction may create an excessive manufacturing cost by removing valuable ingredients in addition to the deleterious powder.

Toxicology is a subject which, in most cases, also suffers from a dearth of basic data. Apparently the question of satisfactory sampling of carbon-monoxide contaminated atmosphere is just beginning to assume the point of reliability. In consequence, the position at the moment is that for the plant either installed or envisaged a substantial proportion is being based on guess work. For the time being, so long as the job is done effectively, good progress is being registered. Looking into the future, however, it will be realised that what is happening is much the same as that which occurred at the opening of the industrial era. Then, in mills and factories, beam engines and their later developments were installed and gave satisfactory service for many decades. When more economical power units and sources of power became available they were quickly taken advantage of by the more progressive concerns, but were neglected by the more retrograde because they placed too much faith in their old notions.

We are making a survey of the percentage of power reserved by foundries for dust extraction and ventilation, and the few figures already available disclose that their importance are of such a character as to demand the most serious attention. Elsewhere we report how a modest brass foundry is expending one-fifth of its total installed horsepower on ventilation and dust extraction. If one regards—and this is not an extravagant assumption—that finality has not been reached in this field, then the industry has the prospect of a periodic renewal of plant resulting in increased efficiency at lowered cost. The American book stresses the need for the best type of engineering to be put into the solution of these problems and to use the phrase now current amongst the younger generation—we could not agree more!

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Visits of Productivity Teams to U.S.A.

The following arrangements are now announced for a number of Productivity Teams to visit the United States under the auspices of the Anglo-American Council on Productivity in order to study factory administration, organisation, layout methods and operating conditions. The entire scheme will be under the direction of a Visits Committee, appointed by the Council. The Visits Committee has a British section supported by a staff located at 21, Tothill Street, London, S.W.1, which will supervise the scheduling of visits, the selection of teams, the completion of travel arrangements and the reporting and dissemination of results. The United States section, supported by a staff located in New York, will supervise the whole of the arrangements in the United States. It is expected that the scale of this activity will be for about 50 teams to be handled up to April, 1950, and a considerably larger number in the following year. The first team will leave early in 1949.

Composition of Productivity Teams.—The teams will be formed on an industry basis, and none of the teams will be composed of representatives of a single firm, though more than one member of a team can come from a single firm. The primary object of the scheme is to enable the widest possible cross-section of each industry to benefit from the observations made. This may frequently mean that a particular team should be drawn purely from small firms, a second team being sent from larger firms. In some industries teams might be formed on a locality basis. Teams will not be able to gain the best idea of the help to be derived by their industry from a knowledge of American methods unless they first have a fairly good idea of varying conditions of operation in their own industry. It will, therefore, be a condition of approving applications that arrangements should first be made for members of teams to carry out a series of visits to factories in the U.K. before they leave for America. It will be of little use to the industry as a whole if they go away with a knowledge of conditions and methods in only their own firm. Similarly, on their return, arrangements will be necessary for them to meet appropriate groups in suitable localities so as to explain and discuss what they have seen and what views they have formed.

The procedure for the selection of the teams will be as follows:—(*a*) Where in an industry, or section of an industry, there is one employers' organisation dealing with both commerce and labour, the British section will look to that organisation to make application, in the light of the above intentions, for the formation of teams to be considered. (*b*) Where in an industry, or section of an industry, there are two separate employer organisations, one dealing with commercial questions and the other dealing with labour questions, the British section will look to either of these two organisations to make application, in the light of the above intentions, for the formation of teams to be considered, but, before so applying, that organisation will consult with the other in order that there may be agreement as to the desirability of the application; and (*c*) on giving approval to any application, the British section will indicate the name of a trade union official with whom the organisation or organisations, as the case may be, should make contact with the object of forming a small joint committee to deal with the selection of the team and to undertake further arrangements.

While no standard composition of team is necessary, it is intended in general to conform with the following pattern:—(*a*) Each team to be a maximum of 15 in total; (*b*) supervisory grades to have a minimum of four places (normally this would include works management and foremen); (*c*) technicians to have a minimum of four places (the possibility of teams of 15, as against a normal 12, is intended primarily to allow for additional technicians in appropriate industries), this category is taken to cover men specialising in planning, layout, methods, work handling, personnel and costing; (*d*) workshop grades to have a minimum of four places (normally this would cover operatives and shop stewards); and (*e*) each team to be accompanied by a secretary—to be appointed by the joint committee referred to earlier—whose primary responsibility will be to assist the team in recording its observations and views so that the greatest benefit may be obtained by the industry concerned. In addition to the teams selected on the above basis, it is intended at a later stage to consider the possibility of forming a few teams composed entirely of specialists in different production subjects.

Finances

All dollar expenditure will be met out of funds made available by the Economic Co-operation Administration. Firms whose men are selected for inclusion in a team will gain by their widened experience, and the firms will be expected to pay normal salaries or earnings during the time involved. The British Government will make a grant in aid to the British section of the Council of approximately 50 per cent. of the sterling costs. The British section will look to the employers' organisations concerned to find the balance of the costs.

Selection of Teams

The joint committees will wish to propose people likely to have the confidence of their industry who, besides having experience and qualities that will make them good observers of American methods, will be likely to do a good job at home describing what they have seen. Individuals should be nominated to the teams who are keen to go, and believe in the objects of the visits. The total commitment in time of anyone accepting membership of a team will be about 3½ months—two weeks for preparation, two weeks for travel, six weeks in America, and, say, four weeks explaining and discussing his findings. The U.S. authorities will require to approve all nominations on security grounds.

Programme in the U.S.A.—The programme in the United States will be adapted to each team, but it is intended in each case for three American plants to be studied. Short visits to a number of other plants will be arranged to suit the particular needs of individual members of the teams. Arrangements will provide for the whole team to meet together at intervals during the visit, while the whole team will receive a full briefing on arrival.

Institute of British Foundrymen — *London Branch Meeting*

Castings for Internal Combustion Engines

At a meeting of the London Branch of the Institute of British Foundrymen at the Waldorf Hotel, with Mr. P. D. Pincott (Branch-President) in the chair, Mr. C. R. Van der Ben (foundry superintendent and metallurgist, National Gas & Oil Engine Company, Limited) and Mr. H. Haynes (manager of the company's foundry, and President of the Lancashire Branch of the Institute) described and illustrated by cinematograph film the organisation of the company's foundry and the plant and methods used for the production of engine castings.

The BRANCH-PRESIDENT introduced Mr. Van der Ben as a well-known metallurgist. His name had appeared in the Press from time to time, especially in connection with the cast crankshaft and the development of acicular cast iron; he had developed and had concentrated on that work as long ago as 1937. Mr. Haynes, the President of the Lancashire Branch of the Institute, was a foundryman of some 45 years' standing, one of those who were known affectionately as practical foundrymen.

MR. VAN DER BEN, in a comment on Mr. Pincott's Presidential Address on the subject of utilising the services of the engineer to the greatest extent possible in the foundry (which had been delivered earlier that evening), said it was singularly appropriate to his own case. In the National Gas & Oil Engine Company's foundry they had been fortunate enough to have had for many years the close and cordial co-operation of very capable and enthusiastic engineers. From their abilities and experience, considerable benefit had been derived. Thus from practical experience he could quite definitely confirm the remarks of the Branch-President concerning the great advantages to be derived from such collaboration.

Having visited a number of foundries in and near London and having had the pleasure of meeting a number of London foundrymen, Mr. Haynes and himself were glad to come to London again to meet many more. On the present occasion they had, as it were, brought their foundry with them. Their contribution was not so much a Paper but, having regard to the film, more in the nature of a works visit.

Film Introduction

In as much as the film could not show the plant layout in its entirety, Mr. Van der Ben discussed that aspect, with the aid of a diagram, indicating briefly the positions of the stock yard, with its overhead travelling crane and various mechanical aids, the melting plant—two cupolas and a rotary furnace—sand handling and coal and coke handling.

The item of greatest interest in the middle bay was the group of moulding machines, six machines in a self-contained unit, which he liked to consider as being as near to mechanisation as one was likely to get with their class of jobbing work. Moulds were produced on the machines, were brought off on conveyors, dressed and prepared for drying. They were then taken to tunnel-type continuous stoves for drying, and were afterwards deposited on the floor and cored-up and cast.

In the green-sand section, horizontal-engine beds mostly were made. That was a line for which the National Company had been famous for a long time, and it had been brought to a high state of perfection. Green-sand flywheels of considerable size and weight were also made in that section. There was also a section for jobbing work, and in a smaller bay there was a section containing small moulding machines making castings in green sand. Shortly, there would be a separate foundry to deal with small green-sand castings; the plant was to be removed from its present location in order to give more room to the large dry-sand moulding, and the set-up for producing the small green-sand castings would be improved. The new foundry would contain sand-handling plant of the underground-return type, with mixing equipment and overhead feed to the machines. In an annexe to the foundry there was a core shop where girls were employed in making the multitudinous small cores required.

Ancillary Plant

The foundry was fortunate in having producer gas laid on, and it was an efficient aid to production. It had a multitude of uses, including the drying of ladles, the skin drying of moulds, and so on, and it was a great time and labour saver. There were also compressed-air mains, so that air was readily available for blowing the dust out of moulds, and so on.

An interesting feature was the Hydroblast plant. Before it was installed there had always been in the fettling shop an accumulation of castings, amounting to 20 tons and upwards. A few weeks after putting the plant into operation, however, that accumulation had disappeared, and it had never reappeared. Further, it was usual formerly for the fettling-shop floor to rise like the tide, and it was a difficult job to keep it down to rail level, free from sand. The Hydroblast plant had also disposed of that difficulty, and nowadays the fettling-shop floor was level. For the first time in 20 years the fettling shop was ahead of casting production.

In connection with the moulding-machine plant, a shake-out was installed, as well as a sand-handling plant. Prior to the installation of that plant, the boxes were knocked out by hand and the men dealt with the sand, and six to eight men were employed there all day and every day. At present two men operated the plant; they were quite capable of dealing with the whole of

Making Engine Castings

the boxes and the sand required for the six moulding machines, there being a throughput of something like 80 tons of sand per day.

Film Display

Although Mr. Van der Ben had referred to the film, which he exhibited as being "home-made," for it was produced under ordinary everyday conditions, without special lighting or stage management; it proved to be very clear, and although it was intended to be shown to varying types of audiences, it was appreciated that it contained a great deal that was of interest to a technical audience. The production of castings for internal combustion engines, in a variety of grey irons, was illustrated, the individual weights varying from a few ounces to 20 tons.

One of the features of the work in the foundry was that so many large castings were being produced by craftsmen who were surprisingly young; and comments were made in the subsequent discussion concerning the encouragement given to those young men to develop their skill and to undertake responsibility.

DISCUSSION

The BRANCH-PRESIDENT (Mr. P. D. Pincott) confessed that he was agreeably surprised by the wide scope of the film, the wealth of information it gave of a practical and technical nature and of the excellent situation regarding labour. He had in mind particularly the number of young men engaged on very large scale work.

MR. G. C. PIERCE (Past-Branch-President), who also expressed his admiration for the film, commented on the use of the Hydroblast, which was of great interest. He had been amazed by the speed of cleaning by that means, for he had thought the time required was considerably longer. It had also been surprising to note the number of trimmers or fettlers working around the large castings, no pneumatic chisels being used.

MR. HAYNES said that fettlers working by hand could beat the pneumatic chisel. Not long ago in the foundry there was a competition between an expert using a pneumatic chisel and a fettler working by hand on a 9-ft. length of pipe; the fettler working by hand had wanted to bet on the result, and he had, in fact, beaten the man with the pneumatic chisel. Actually there were pneumatic chisels in this foundry. With regard to the Hydroblast, he said that Mr. Van der Ben and himself were not concerned to publicise it, but they had found that it was a success and that its use was of benefit to the foundry. It was up to others to spend the money on such plant if they considered it worth while.

Youth Training

The film was used extensively to educate and encourage the boys in the foundry. The eldest boy engaged in the making of a casting shown in the film was 23 years old, and the casting was worth £1,000 at the foundry door. Mr. Haynes also showed a photograph of a group of 38 boys, who took responsibility for making large castings and who were trained at the foundry. The Government had claimed four of the boys in the group for the Forces; and Mr. Haynes took the opportunity to urge that the boys should not be called before they had completed their apprenticeship time. Their training in the foundry gave them initiative, and one was not afraid if they made a bad casting. They worked, of course, under supervision.

Exhibiting some cores, he said that they were made with re-claimed sand, and he believed his foundry was the first in the country to use re-claimed sand of the specification shown. The cores, some of them 3 ft. 6 in. long and 2 ft. deep, were made by girls, using re-claimed sand, and the castings in which those cores were used were perfectly clean inside. The foundry had given up buying sea sand. He exhibited also a sample of the manufactured sand, and another of sand re-claimed from the Hydroblast; and he invited questions.

Standardisation of Moulding-box Ranges

MR. B. LEVY referred to a crankcase and cylinder block for an eight-cylinder job shown in the film, and said that he had made patterns of a similar size for some prominent Diesel-engine manufacturers in the North; so that that sort of work was not unfamiliar to foundrymen in London. Asking why such a deep box was used for the large crankshafts, he said there seemed to be an unnecessary amount of sand covering the top, which appeared to be two or three times the depth of the castings. He wondered if there were any special reason for that. He also asked whether the crankshafts were cast horizontally or vertically. Requesting more information concerning the converging grooves for the quick assembly and removal of pattern boards and plates on the moulding machines, he wondered whether there was a chance of the pattern plate becoming out of level in relation to the draw of the machine. The method shown for the inspection of the coring up of large moulds was a very good feature, and he would like to see it adopted as a standard unit for a number of large-size moulds.

MR. HAYNES replied that the crankshaft referred to by Mr. Levy was cast horizontally; the boxes used, in which liners and all sorts of other castings were made, were standardised, whatever the width of the machine and its draw. To adopt the American idea would mean filling the shop with hundreds of different sizes of boxes. All the boxes used were interchangeable and tops and bottoms were alike. As they came from the knock-out machine they fitted any moulding machine which required them. There were over 500 patterns in use at different periods.

An important point was that the more pressure one could put on the casting, the better. One did not want a shallow box for a crankshaft, because one did want to apply pressure. At his foundry they did not put on risers; instead they used deep runner boxes in order to apply the pressure.

Mounting of Pattern Plates

With regard to the changing of moulding machine pattern plates, on the moulding machine there was a table with two permanent cast-iron dovetail grooves, screwed on. On the board there was a projection groove which slid along and located in the grooves and, these being under-cut, the board was prevented from falling off when the box was turned over. The pins were mounted on the pattern board.

MR. VAN DER BEN added that on the small green-sand moulding machines there was a different system. Cast-iron frames, about 1 in. deep, were mounted permanently on the machine table. The patterns were mounted on shallow boards which dropped into the recesses formed by the frames. They were located by screws through the pattern board into the machine table. All patterns were mounted on their own boards and remained on those boards. All that was necessary when changing patterns was to release four screws, lift the pattern and board out of the frame and drop another one in.

Moulding Sand Supply

MR. W. W. HARRISON, referring to the heavy machine-moulding section of the foundry, said it seemed to him that the sand storage was comparatively small and, bearing in mind the comparatively large boxes used and the large amount of sand used therein, it appeared that the sand must travel around the system very frequently. If that were so, he would like to know whether they were using a naturally-bonded sand or a synthetic sand; if the former, were they using any bonding agent to retain bond strength.

MR. HAYNES replied that they did not use any "pepper and salt" additions to the sand whatsoever. When a box came to the shake-out, the sand was shaken out and was passed to a storage bin which held 25 tons; from there it came down to a mixing machine, which he had introduced himself, and from there it fed all the moulding machines, while the men there had only to watch it. The moulders on the machines had their facing sands, which were of various strengths, depending on the nature of the jobs being moulded. There was no adulteration of the sand.

MR. HARRISON said that from the film he had not realised that there was storage of 25 tons of sand.

MR. HAYNES added that 80 tons a day was passing through the system.

Mould Drying

MR. J. F. CHAMBERS, discussing the skin drying of moulds, asked whether the moulds passed through the stove on conveyors, for what length of time they were in the stove, and to what depth did the drying penetrate. Recalling a statement that moulds dried in the morning were cast in the afternoon, he asked whether, if they were dried in the afternoon, they would cool down overnight, bearing in mind that they were only skin dried; in that case, were the surfaces re-heated, or could they be cast when cold?

MR. HAYNES said that sometimes, if cores were not available, moulds had to stand for a week. At first there had been batch-type drying stoves, where moulds were piled on top of one another, and it transpired that one would prevent another drying. Therefore, tunnel-type continuous stoves were made, which used producer gas for firing. A stove held six boxes, and one box came out every five minutes. The depth of drying was about 1 in. Scores of moulds were left standing for two or three days and did not go back to the stoves; yet there was never a scab on the castings.

Moulds passed through the stoves on roller conveyors which were set with a slight fall to the discharge end and there were no doors to the stoves. Moulds were distributed and cored-up and closed when cold; he did not believe in closing moulds when they were hot unless they were thoroughly dry.

A member, referring to some moulds of which one part was dry sand and one part green sand, wondered whether there was a scoring effect at the point on the green sand where the metal from the ingate reached the moulds, and whether precautions were necessary to avoid that. Commenting on the hand ramming of a large mould, as shown on the films, he said it seemed to him to be rather old-fashioned for a job of that size to be rammed by hand. As to the finishing of the moulds, he wondered whether any swelling occurred due to ramming and pressing the pattern a little, or whether the sand was so firm that they were able to cast large jobs without giving rise to the troubles experienced with the smaller types.

MR. HAYNES replied that "swells" might occur where moulds had not been properly rammed; if so, someone was in trouble. Bed castings weighing up to 5 tons were made in moulds in which green sand was used, and one never saw a scab. It was not necessary to "armour plate" them with sprigs; indeed, one could imagine that, when making two castings of that size per week by two moulders and one labourer, there was no time for putting in sprigs. There was no scoring effect at the point where the ingates met the mould. Flywheels weighing up to 9 tons were made in green sand on the floor. The drying of the top part was effected by means of a gas jet, and in that particular case they did "armour plate" with sprigs in the boss, where the metal dropped in.

(To be Continued)

Bradford Society's Jubilee Celebrations

The first of a series of functions celebrating the fiftieth anniversary of the Bradford Engineering Society was a whist drive and dance held in the Bradford Technical College. It will be followed by a jubilee dinner in May and a special evening for the ladies later on. It is a coincidence that this year's president is Mr. A. Hiles, of Baildon, engineer at the Airedale Mills, of C. F Taylor & Company, Limited, spinners, Shipley, whose father was a founder member. In addition, his brother, Mr. Wilfred Hiles, is a senior vice-president. Mr. A. Hiles has been a member for over 25 years.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

SILICON CAST IRON FOR HIGH-TEMPERATURE SERVICE

To the Editor of THE FOUNDRY TRADE JOURNAL

SIR,—The abstract, on p. 9 of your issue of January 6, of White and Elsea's article, suggests that the original, by reason of its omissions, might be misleading to students. In the first place the authors confine themselves to comparing the growth of 1.86 per cent. silicon iron with that of 6 per cent. silicon iron (Silal), which is akin to comparing the strength of smell of a scentless rose with that of a scented one.

The performance of a cast iron used commercially under elevated temperature conditions is not to be predicted from a growth test. In practice, thermal shock is a commoner cause of failure than growth. Again, the kind of corrosion-erosion caused by pyrites in fuels plays more havoc with commercial firebars than does growth. Also, creep, thermal conductivity, thermal expansion and the increase or decrease of elongation, deflection and strength as the temperature alters, are factors as important as growth. Where scaling is a major trouble, as in cases of containers for malleabilising operations, Silal is not outstandingly efficient. The difficulties peculiarily associated with moulds for the glass bottle industry are not, as far as my experience goes, overcome by the use of Silal. Cold Perlit (0.5 to 0.95 per cent. silicon); Silal (five to six per cent. silicon); Nicrosilal (ditto with high nickel); Loded irons (three to six per cent. silicon with one to five per cent. chromium); each has its own advantages, while it is possible to make all from an ordinary cupola. Incidentally, none of them can safely be taken for granted as the answer to a high-temperature service. Ironfoundries marketing speciality cast irons have had bitter experiences in the "heat-resisting" business such as would not make them as eager to eulogise Silal (or anything else) as Mr. White and Mr. Elsea appear to have done. The old saying that "circumstances alter cases" is particularly applicable to problems connected with either heat-resistance or corrosion-resistance.

Yours, etc.,

HORACE J. YOUNG.

15, Lansdowne House,
Manchester, 20.
January 19, 1949.

Employers' Associations

Still pondering over Mr. Eric L. Heathcote's objection to our use of the phase "employers' associations" for organisations of firms which exclude consideration of wages from their activities, it occurred to us that the phrase "manufacturers' associations" might be adequate. Perhaps the industry's liaison committee might give a few moments thought to this at their next meeting.

MR. OLIVER SMALLEY, O.B.E., the President of the International Meehanite Metal Company, Inc., is shortly leaving New York for a business tour of South Africa. From there he will, later this year, come to this country.

Founding Centenaries

By George J. S. King

It was in 1849 that Prince Albert first mooted the idea of the Great Exhibition, and the building which housed it (and which became subsequently the Crystal Palace) was the first notable instance of the appplication of cast iron on a large scale.

Sir Josiah Guest became in 1849 sole proprietor of the great Dowlais Ironworks, and it is recorded that in that year the firm "sent into the market seventy-five thousand tons of iron in the form of bars and rails." Sir Bernhard Samuelson (who subsequently erected blast furnaces at Middlesbrough, to which he added collieries and ironstone mines) purchased a works at Banbury that year; and Mark Firth joined forces with his father and brother in establishing the great Norfolk steelworks at Sheffield.

A number of notabilities of interest to the foundry and associated trades were born in that year of grace 1849. Among them was Lord Randolph Churchill, father of Mr. Winston Churchill, and those who think present-day difficulties are new may be astonished to recall a speech made by Lord Randolph Churchill at Blackpool in 1884. He told the electors:—

"Your iron industry is dead, dead as mutton; your coal industries, which depend greatly on the iron industries, are languishing. . . . Turn your eyes where you will, survey any branch of British industry you like, you will find signs of mortal disease."

Thomas Edgar Pemberton was born on July 1, 1849; he was famous as a writer on numerous subjects, and was also owner of an old-established brassfoundry in Livery Street, Birmingham. Henry Clay Frick (born December 19) was President of the H. C. Frick Coke Company, and of the Carnegie Steel Company, John Hopkinson (born July 27) was one of the most famous engineers of Victorian times, being especially notable for his researches on the dynamo. In 1885 he published the results of a series of experiments on the magnetic properties of iron, and he was author of "Magnetisation of Iron," "Magnetic and Other Physical Properties of Iron at a High Temperature," "Recalescence of Iron," "Physical Properties of Nickel Steel," "Density of Alloys of Nickel and Iron," *etc.*

One of the most interesting centenaries of the year is that, on December 1, of the death of Ebenezer Elliott, the famous "Corn-Law Rhymer." Elliott was a master ironfounder, and his warehouse was described as a "dingy place, full of bars of iron of all sizes, standing in heaps everywhere around." Although he was famous with his contemporaries as a poet, it seemed that his principal topic of conversation was the price of iron!

Among other obituaries of 1849 were Sir Edward Thomason (died May 29), who manufactured work in bronze; Johann Wolfgang Döbereiner, who was famous for his discoveries in the properties of platinum; and James Ransome, who extended the business of the famous Ipswich iron firm to include the manufacture of railway chairs and rails.

A Sound-proof Fettling Shop

The troubles which beset foundries due to location are manifold. Sparks, smoke, impure water supplies and many other difficulties are amongst a long catalogue which from time to time have been recorded in our columns. The particular trouble which the Kerfield Place non-ferrous foundry of the well-known London engineering firm of Samuel Jones & Company, Limited, had to contend with originated during the war. The foundry, then situated at Ossory Road, was

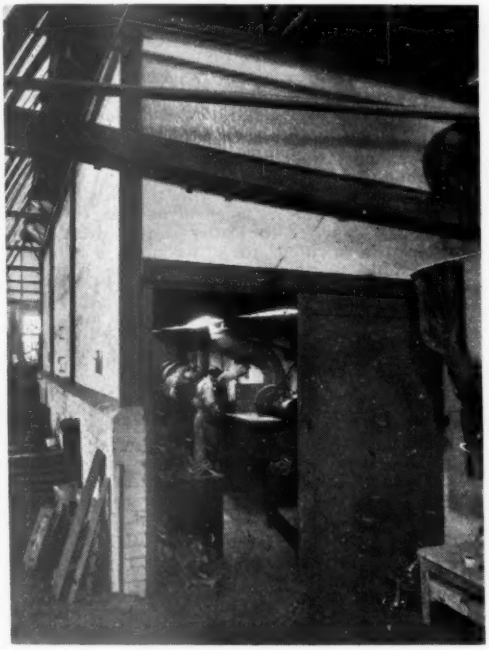

FIG. 1.—SOUND-PROOF FETTLING SHOP INCORPORATED IN THE EXISTING BUILDING.

"blitzed," and Mr. Tolliday, the manager, was fortunate in securing a disused laundry. The premises were well suited for conversion into a brassfoundry—except that at the rear there is a hostel for Crippled and Invalid Women Workers. Thus steps had to be taken to minimise the noise of the machinery installed in the foundry cleaning department. Through the co-operation of the company's architect with the Department of Scientific and Industrial Research, the result has been the construction of a sound-proof room for 11 operatives, which is illustrated in Fig. 1. The machinery installed includes a "Jackman" revolving-barrel type of shot blast; two double-ended "Rowland" Grinders; a "Coleman" abrasive cutting-off machine, and a "Midsaw" band saw. This shop is particularly well ventilated, the dust from each machine being evacuated to a cyclone separator installed in the open air and so constructed that the metallic dust is salvaged.

Foundry Layout

Throughout the foundry also, ventilation has been the subject of much thought. The melting plant, divided into three units, consists of two 400 lb. Morgan tilters, one battery of five 100 lb. pit-fired furnaces, and a second one of two 150-lb. capacity units. The canopies in all cases were noted to be particularly effective. In the main shop, there is a series of four-bladed fans for keeping the atmosphere moving and also four 1½-h.p. extraction fans. Finally, the roof is constructed of easily opened pivoted steel roofing shutters. Of the total of 105 horsepower used in the works, 20 per cent. is employed in dust and fume extraction.

Moulding and Core-making

The floor is concreted and all moulds are set on long lines of parallel rails about a foot above it. Much tub-moulding is practised, but for long runs there are four Jackman straight-draw squeezers very efficiently operated by female labour. These young women, ramming partly by hand, turn out 100 moulds *per diem*. After making about six or eight half moulds, the pattern plate is reversed.

For moulding, a mixture of Mansfield and Erith sand is used. It is prepared in a mill and then put through mechanical sieves. Mr. Tolliday confesses to being somewhat extravagant in the use of new sand. Yet the girls on the moulding machines find it is necessary to wash the whole of their legs before leaving the foundry, facilities being provided for this purpose. The worry is, where does the dirt come from? There is a nice little core shop staffed by Mr. W. W. Slack, who is 73 years old, and a few girls. Much use is made of a Coleman horizontal core blower. Cores are dried in a gas-fired oven. A second small shop is devoted to trimming, sorting and despatch.

Die-casting and Pattern Shops

In another room a young man is turning out about 700 small valves per day for fire extinguishers. These are made from antimonial lead on a pressure die-casting machine. Finally, there is a small shop devoted to the production of metal patterns. The foundry makes the usual range of brass, bronze, and gunmetal castings, together with a limited amount of aluminium. There is a small canteen on the site for the provision of light meals, but those requiring a substantial repast can use the main works' canteen at Peckham, distant about 10 minutes' walk. The writer thanks Mr. Tolliday for the very courteous reception accorded to him.

Book Reviews

"75 Years Progress." Published by the United Patternmakers' Association, 15, Cleve Road, West Hampstead, Kilburn, N.W.6. Price 4s. post free.

This well-illustrated book has been published in order to mark the 75th anniversary of the establishment of the United Patternmakers' Association, which was formed in Sunderland in April, 1872. In spite of the amalgamations which have taken place in trades unions this prosperous Union of highly skilled craftsmen has maintained its independence, and although comparatively small in number it is held in the very highest esteem by the industry generally, both employers and employees.

Outstanding events in the Association's progress are dealt with in detail and there are many pictures of officers both past and present—the men who laid the foundations and those who are carrying on to-day. The pride of the craftsman in his work is indicated by the fact that nearly half the book is occupied by photographs of various types of patterns illustrating the wide scope of the patternmakers' craft and the very high degree of skill and knowledge which is required in the individual craftsman. This is a most interesting and informative publication, the perusal of which can be commended not only to those in the foundry industry but to all who are interested in engineering.

T. M.

Sheffield—Its Story and Achievements. By Mary Walton. Published by the Sheffield Telegraph and Star, Limited, Kemsley House, Sheffield, 1. Price 10s. 6d. net.

The reviewer, being an exiled Sheffielder, probably values this book more highly than would a truly impartial critic. The use of the pure localism "jennel" brought back memories of a long forgotten word, yet it must remain meaningless to the general public. Alleyway is the more usual expression. On the facing page (108) to that on which "jennel" appears, use is made of the word "patterns," meaning clogs. Is this a second colloquialism or merely a misprint? The book has been divided into four distinct sections. The first takes the story of the locality from the times of the Celts and Romans to the year 1617. This has been well done, for the general history of a country at that period is not necessarily the same as for a locality far removed from the centres of political activities. The next section takes the story up to 1740, a period which saw the incorporation in 1624 of the Cutlers' Company, which is still flourishing.

Part III deals with the 1740 to 1843 period—quite erroneously known as the Industrial Revolution. Actually it was an evolutionary period, characterised by formation of larger industrial units controlled in most cases by ex-workmen. The authoress rightly stresses that there was a commercial revolution brought about by the need for banking facilities consequent upon industrial expansion. The period saw the invention by Huntsman of the crucible steel-melting process. The reviewer still agrees with the authoress

(*Concluded at the foot of column* 2)

House Organs

The Tandem News, issued by the Eyre Smelting Company, Limited, Merton Abbey, London, S.W.17 (4th quarter).

This house organ addresses itself to its customers. It contains useful articles on bearings; on the use by the foundry of ingots sold to specification as a raw material; on defects in tin-alloy die-castings, and the patching of car bodies. The contents are completed by a review of the metal market.

The Stantonian. (December issue.) Published by the Stanton Ironworks Company Limited, near Nottingham.

This issue gives details of the 30th prize-giving day, at which a total of £447 was distributed to Stanton students. The students at Cochranes received £57. In all there were 198 prize-winners. Other matters included are: a visit by prominent Egyptian Government officers, the annual flower shows, and notes on the activities of the various social clubs.

One Hundred and Eleven. Christmas number of the Hammond Lane Foundry Company Limited, Dublin.

Like another house organ, with a somewhat larger number, this one devotes much of its space to stories and jokes. Many of the latter relate to their own personnel. In addition, there are notes on the not inconsiderable sporting activities, for the Hammond Lane Foundry heads quite a large group of industrial activities.

"600" Christmas number. Published by the 600 group of Companies, Cunard Works, Chase Road, London, N.W.10.

This issue is embellished with a series of eight excellent reproductions in colour of some of the most famous pictures in the Tate Gallery. The stories, jckes and humorous sketches are of the high standard long established by "600." On the more serious side, there is the chairman's address to the shareholders. From this the reviewer learns with interest that the steel foundry of K. and L. Steelfounders & Engineers Limited has had an increased output of 28 per cent. with only an 8 per cent. increase in personnel.

THE "DAILY MAIL" IDEAL HOME EXHIBITION will this year be open at Olympia from March 1 to 26 on week-days from 9.30 a.m. to 9.30 p.m.

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that "He [Huntsman] is one of the inventors, rare in the history of science, whose claim as a pioneer has never been successfully challenged," despite the assertion by Mr. Bruce Simpson in his recent book that the Indians practised the art hundreds of years earlier.

A young London girl reading this book, and possessing but a slight knowledge of Sheffield, was disappointed that no modern maps were included. Perhaps she is right, and if there is to be a second edition, the publishers might consider this plea.

V. C. F.

★ Roll Founding* ★

By W. G. Scott
(Slightly Abridged)
(*Continued from Page* 53)

An example of charge working for a steel-roll melt developed on the basis of bath conditions relative to slag freezing speed is given in Fig. 7.

Charge:—

Hematite	..	..	16.6 tons
Turnings	..	..	2.3 ,,
Heads	..	..	6.9 ,,
Rolls	..	..	6.4 ,,
Cranks, etc.	..	..	13.8 ,,
			46 tons

Composition: 1.78 per cent. C.; 0.70 per cent. Si; 0.73 per cent. Mn.
Required ladle carbon: 0·75 per cent.-0.80 per cent.

Control is based chiefly on slag fluidity measurements. For sampling of slag, the standard mould developed by the A.O.H.R.A. is used. This mould, with ¼-in. bore diameter, is much more sensitive to slag changes than the Herty and under standardised sampling procedure gives consistent results. As shown by Fitterer,[4] there is a direct relationship between slag fluidity, slag composition, and temperature. Decrease in fluidity corresponds to a decrease in FeO and an increase in SiO_2. Since SiO_2 solubility is a function of temperature, increased SiO_2 content in the slag indicates rise in temperature. A corresponding drop in bath carbon accompanies decreased slag fluidity.

The close relationship between slag fluidity decrease and carbon drop is shown by their respective curves. At boil the slag is 12 in. and carbon 1.30 per cent. Thirty minutes later with slag 9¾ in. the carbon has fallen to 1.05 per cent., representing a rate of carbon drop equivalent to 50 points per hr. The rapid decrease in slag fluidity, accompanied by a colour change from dark to light green (on the ¼-in. dia. tube sample) indicates that to maintain a fast rate of carbon removal, an ore feed is required. Fifteen minutes after the ore and lime feed the slag is still 9¾ in. with carbon at 0.96 per cent. From this point the slag continues to decrease in fluidity. Thirty minutes after the ore feed with slag at 8¼ in., carbon is 0.87 per cent., which represents a carbon drop of 36 points per hr. in this period.

At 8¼ in. slag, limestone is added to complete the carbon oxidation and to reduce the FeO content of the slag. Thirty minutes after limestone addition with slag fluidity 7¼ in. the carbon is 0.78 per cent., representing in this period a drop in carbon equivalent

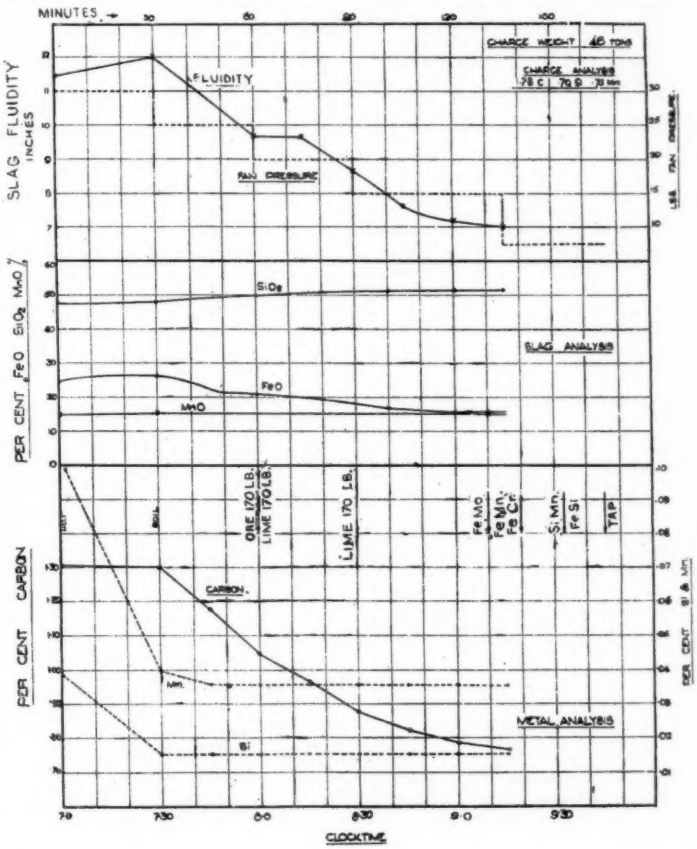


FIG. 7.—FURNACE CHARGE WORKING. BATH CONDITIONS RELATED TO SLAG FREEZING SPEED.

* A paper read at a meeting of the West of Scotland Iron and Steel Institute. The author is on the staff of R. B. Tennent, Ltd., Whifflet Foundry, Coatbridge.

Roll Founding

to a rate of 18 points per hr. Fifteen minutes later with slag 7 in. deoxidisers and alloys are added. At the going-on stage carbon was 0.76 per cent. The continuous downward trend of the slag fluidity and carbon curves indicates a rising temperature. That the bath temperature is sufficiently high is confirmed by the slag behaviour after ore addition. Ore, added to a bath with decreasing or low temperature, results in a fluidity increase. How the slag curves are used to regulate fuel input and control bath temperature is shown by the fan pressures.

In its essentials the method is calculated to promote vigorous boiling, to avoid superheat, and to prevent silicon pick-up. With the low silicon and manganese content charge, on melting out the slag volume is low, which, with the low residuals, make it easy to initiate the boil. Heat transfer is rapid, and with the active slag this maintains a vigorous carbon reaction without excessive heat input. The vigour of the boil as shown by the rate of carbon drop is considered of more importance than time in sweeping hydrogen from the metal. Temperature is maintained as constant as possible and increase is prevented by regulating fuel input. A prolonged refining period under a low FeO, high SiO_2 slag is avoided. Throughout the heat, so far as it is possible to control, carbon is oxidised according to the FeO + C reaction and any oxidation of carbon accompanied by reduction of silicon is prevented.

As a general rule the low silicon and manganese charge manipulated as described above is the method employed where the principal requirement of the steel is hardenability. When toughness or ductility is the essential, silicon reduction with a high metalloid charge is the practice.

Heat treatment

Assessment of roll metal properties must always be relative to service conditions, and in practice it is usual to evaluate such properties in terms of wear resistance. Hardness measurement is a first consideration since for each application there is an optimum figure. Normal methods of physical testing are of limited value unless associated with structure, which experience has shown is the predominant influence in determining roll life.

The method employed in developing suitable heat-treatment is illustrated by the following example of a 1·30 per cent. carbon low allow steel. For each composition a gradient hardness chart (as in Fig. 8) is prepared from samples of the conditioned* steel and the heat-treatment cycle, which will confer the required roll properties, is determined by correlating microstructure, hardness, and physical tests. For example, according to Fig. 8, point A corresponds to the beginning and point B to the finish of transformation. These two points mark the limiting range of spheroidisation wherein the steel must be treated if deposition of carbide filaments as grain boundary network is to be prevented.

Although with this steel Ac is 780 deg. C. as found by thermal analysis, spheroidisation is not complete until 810 deg. C., and transformation does not end—at least in mass—until 880 deg. C. It is in the softest condition with a hardness value of 223 V.P.N. The hardness of specimens treated above 810 deg. C. shows a progressive increase corresponding to growth in spheroid size, until 880 deg. C. at which temperature re-solution of the carbides takes place, and the structure reverts to what it was previous to 780 deg. C., namely lamellar pearlite with boundary cementite.

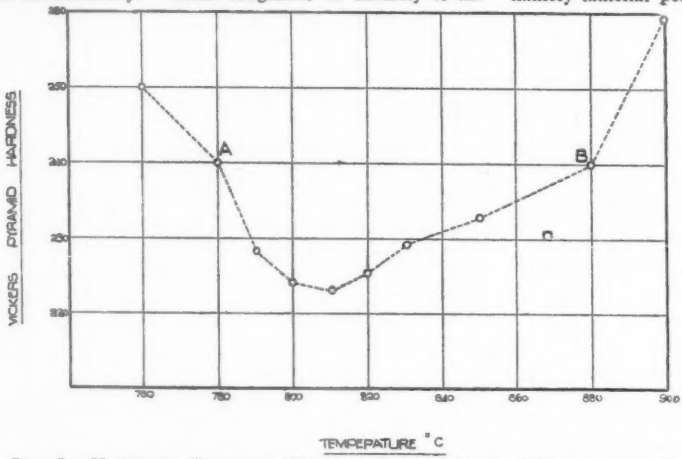


FIG. 8.—HARDNESS GRADIENT CHART FOR ALLOY STEEL, 1.30 PER CENT. C. HARDNESS CONDITIONED 298 V.P.N. RATE OF COOLING, 30 DEG. C. PER HOUR.

On the basis of the data obtained from the chart, hardness may be intensified as desired by faster cooling rates. The structure of the same steel, after normalising from 860 deg. C. has a hardness of 305 V.P.N. as compared to 235 V.P.N. expected from annealing, which is simulated in practice by the standardised cooling rate of 30 deg. C. per hour employed in constructing the hardness chart. The chemical composition of the steel and the structure to be developed are decided according to the design of the roll, and the nature of the service for which it is intended.

In general and in very broad terms, where wear is principally a question of abrasion, a large-grain-size steel is chosen having carbon at a maximum for the optimum hardness, which is determined by such factors as

size, section, draft, and bite, and heat-treated to give a microstructure consisting of lamellar pearlite. Similarly where roll life is determined by surface breakdown resulting from fatigue and occasioned by temperature fluctuations and cyclic stress, a small grain size steel heat-treated to its most stable condition, *e.g.*, spheroidised, and with the required hardness developed with alloys, would be selected.

Conclusion

In this analysis of roll founding the chief concerns have been to present a comprehensive view of the subject in as practical a manner as possible, consistent with an appreciation of roll making as a metallurgical process. In covering such a wide field it has been necessary to omit much detail and to indicate but briefly the theoretical basis on which practice has been established. In the development and application of control to practice, great benefit has been derived from the published work on research in many different fields, and tribute must be paid to these workers.

Finally, the Author wishes to thank the Chairman and Managing Director of Messrs. R. B. Tennent Limited, Hon. Sheriff J. Tennent, D.L., J.P., Past President of the Institute, for his permission to present this paper, and also to acknowledge the assistance of the Research Dept. at Whifflet who prepared the photographs and slides.

REFERENCES.

1 "Practical Interpretation of Theoretical Steel Making." Christopher, Blast Furnace and Steel Plant, 1946, vol. 34, p. 1123.
2 "The Fluidity of Steel," Jackson, Knowles, Middleham and Sariant, J.I. and S.I., 1947, vol. 157, p. 1.
3 Recent Results from Fluidity Tests, Ruff, Stahl, and Eisen, 1948, vol. 63, p. 438.
4 Acid Open Hearth Slag Fluidity and its Significance. Bulletin 1. Acid Open Hearth Research Association Inc.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

FEBRUARY 2.

Manchester Metallurgical Society.

"Precipitation-hardening Effects in Relation to High-temperature Testing," by J. Glen, B.Sc., F.I.M., at the Engineers' Club, Albert Square, Manchester, at 6.30 p.m.

Institution of Production Engineers.

Wolverhampton Section:—"Production of Fine Surface Finishes," by H. W. Lawton, at the Dudley and Stafford-shire Technical College, Dudley.

Nottingham Section:—"Purchasing to Schedule," a lecture at the Victoria Station Hotel, Nottingham, at 7 p.m.

FEBRUARY 3.

Institute of Vitreous Enamellers

Midland Section:—"Drying," by S. Hallsworth, at the Chamber of Commerce, New Street, Birmingham, at 7.15 p.m.

Institution of Production Engineers

Glasgow Section:—Informal Discussion: "Improved Production Methods and Management," at the Institution of Engineers and Shipbuilders in Scotland, Glasgow, at 8 p.m.

FEBRUARY 5.

Institute of British Foundrymen.

Wales and Monmouthshire Branch:—"Steel Melting." Joint Meeting with the Newport Metallurgical Society, at Newport Technical College, at 6.30 p.m.

West Riding of Yorkshire Branch:—"Foundry Education," by H. A. MacCall, B.Sc., at the Technical College, Bradford, at 6.30 p.m.

The Iron and Steel Institute

Summer Meeting in Norway, 1949

The Council of the Iron and Steel Institute have accepted an invitation from the Norsk Metallurgisk Selskap (Norwegian Metallurgical Society), President, Dr. J. Goerissen, and from representatives of the Norwegian metallurgical industries to hold a special Summer Meeting in Norway in 1949. Mr. G. Schjelderup, A/S Christiania Spigerverk, Oslo, has kindly consented to be chairman of the Norwegian Reception Committee which has been formed in Oslo. Mr. Christian Sommerfelt will act as honorary secretary. Local reception committees have also been formed at a number of other places which will be visited. By arrangement with the Bergen Steamship Company, Limited, M.S. Venus (7,000 tons, 20 knots) is being made available to the Institute and members and ladies will be accommodated on board throughout the meeting. M.S. Venus will leave Newcastle-upon-Tyne in the evening of Saturday, May 28, 1949, and return there on the morning of Tuesday, June 7, 1949.

Programme. Papers on the following subjects are to be presented:—"The Metallurgical Industries of Norway"; "The Practical and Economic Aspects of the Use of Electricity in Norwegian Steelworks"; Iron-ore Concentration at Syd-Varanger"; "Agglomeration of Taconite Concentrate"; "A Method of Determining T.T.T. Curves"; "Some Points on Brittle Fracture in Mild Steel," and "The Use of Olivine Sand in Foundries." These are of Norwegian authorship.

Additionally, there will be Papers on "British Electric Furnace Design" and "Experiences in the Study of T.T.T. Curves" from this country.

The members will sleep on the ship for the whole period of the tour. There are to be social gatherings in Oslo and Bergen, and technical sessions on the ship and in the university buildings at Oslo. Works will be inspected in a number of the localities to be visited; sixteen industrial organisations are opening their establishments for this purpose. The cost of travel, accommodation, meals, excursions and the like varies from £49 to £79 per person. Registration forms from intending participants are to be returned not later than February 7 to the Secretary of the Institute.

THE BRITISH STANDARDS INSTITUTION Monthly Information Sheet for December, 1948, lists amongst new Standards issued, No. 1448:1948, Nomenclature of decorative metallic finishes (2s. 6d.), and No. 1461 : 1948, Chromium-molybdenum steel castings (2s.), which are of interest to our readers.

Amongst "New Work Started" there is work being done on industrial eye protectors; non-ferrous conduit and fittings, and methods for sampling of coal and coke (revision B.S. 1017). Finally, amongst "Draft Standards Circulated for Comment," there are CJ 9434, Wrought iron and mild steel hooks for cranes and slings (revision of B.S. 482); CK 47, Cast-iron street-lighting columns; CK 285, Method for the determination of magnesium in aluminium alloys, and CK 286, Method for the determination of zinc in aluminium alloys.

Notes from the Branches

Newcastle-upon-Tyne

Mr. S. Unsworth, presiding over the December meeting, first welcomed as guest speaker, Mr. V. C. Faulkner, Editor of the FOUNDRY TRADE JOURNAL and Past-President of the Institute, and commented on the great influence he wielded in foundry circles. Moreover, his advice was widely sought and invariably appreciated.

Returning thanks for his reception, MR. FAULKNER made a short speech in which his remarks were chiefly directed to the younger members of the Institute. He was distressed to find so many young foundrymen who knew nothing of the commercial side of their industry. Perhaps nowadays they talked too much politics. He would prefer them talking shop again and thereby getting a knowledge of the distribution of the industry and its prominent personalities both at home and abroad. They should regard potential employers as customers for their skill, and it was just as well to know as much as possible about customers. Industrial organisations, like individuals, had special interests; with some it was welfare, for others sports activities or research. Thus, when applying for a position on the staff of these concerns, stress could usefully be placed on a personal interest in the " pet " activity.

MR. J. G. GILBERT, associate member of the Newcastle Branch, then read his Paper, entitled " Cores, Core-making and Core-making Materials."* He apologised for the title, as the bulk of the matter in his Paper related to oil-sand and " patent " sand; but he felt strongly that these materials had not been sufficiently exploited. His excuse was that the methods described were based entirely on practical experience with sands which had given highly satisfactory results. The Paper was supported by an excellent series of slides showing details in the making of cores and core-boxes and the resultant castings. The Author insisted upon the necessity for discussion and co-operation between patternshop and foundry to ensure economical and satisfactory castings. Full details of the mixture of sands used were given. It was stated to be impossible to have one type of sand mixture to cover the full range of cores required for the castings produced, and so four different mixtures were used. Much importance was attached to samples of sand being taken daily and tested for permeability and strength. Moulders, he had observed, took great pains in venting with loam cores, but took less care with oil-sand cores—which was a mistaken idea, as the oil sands generated more gas.

Cores for machine-made moulds and light castings demanded little ramming and gave suitable employment for female labour; the smaller cores on benches could be set alongside a steel band conveyor which carried them along to the drying stove. With larger cores, which could not be turned over by hand, there could profitably be a conveyor in which was incorporated a turnover mechanism easily operated by girls. The best results in core-drying obtained by the firm with which the Author was associated was by using controlled heat in a gas-fired stove with thermostatic control. This stove had the advantage of having a cooling chamber at the bottom. The large cores were dried in racks. The Author advocated the use of jigging or fixing at the core bench for as many cores as possible where they were for a complicated job; this practice has been proved to give a great saving of time. Needless to say, a little extra time spent on finishing cores and moulds saved many hours of toil in the dressing shop. By the use of oil sands they had cut down cleaning times by 30 to 40 per cent.

*Shortly to be printed in the Journal.

DISCUSSION

Replying to Mr. Faulkner, MR. GILBERT said they had had no trouble with core-blowing machines, which, in fact, in some measure could be attributed to the experience they had gained with the four mixtures they used.

MR. E. B. ELLIS noted that linseed oil appeared in some of the mixtures, and wondered if they had tried substitutes, synthetic resins, *etc.* The reply was that they had tried all sorts of mixtures, but none equalled their standard sands.

MR. C. GRESTY and other members raised the question of fumes. How were they dealt with?—Were they objectionable?—Did their volume vary with the different mixtures? *etc.* It was a question much to the fore with the industry, and was a most troublesome one.

MR. GILBERT, in his replies, insisted that there was no trouble with fumes. When the job was cast the gases were lighted, and, after the burning of the gas ceased, they still had no complaint about fumes. In elucidation of the point, MR. N. CHARLTON explained that the foundry buildings were light and airy with ventilators in the roofs.

MR. W. SCOTT asked if the vertical core-oven drive had only one speed, or whether it was variable so that it could be run at different rates according to the size of the cores. The core-box turnover gear interested him very much, and he suggested someone should take it up as a manufacturing possibility.

MR. GILBERT replied that there was a controlled speed.

MR. C. R. TOTTLE pointed out that the Mansfield sand, which formed a component of two of the four mixtures specified, contained a percentage of clay. Some of the clay bonds were unsuitable owing to water content. Had different sands been tried?

MR. GILBERT replied that different sand mixtures had been tried. They had trouble with scabbing, but never with oil core sands, even when working on steel and high-tensile cast iron.

MR. J. WALTON, alluding to the core-boxes shown on the screen, remarked that foundries seemed wedded to the use of wooden core-boxes. If we were to progress, metal core-boxes should come into more general use. There were quite a number of aluminium core-boxes available in the country. Foundries required improved tools, otherwise they were handicapped.

Winding up the meeting, a vote of thanks was given to Mr. Gilbert for his Paper and an invitation was given to Mr. Faulkner to visit the Branch again.

Personal

MR. J. L. BLAKE, an Assistant Comptroller, has been appointed to succeed SIR HAROLD SAUNDERS as Comptroller-General of Patents.

MR. HENRY COATES, a director of the Watford Electric & Manufacturing Company, Limited, has been appointed an additional member of the Electricity Consultative Council, for the Eastern Area.

MR. FRED W. TRIBBLE, who has been with the Aerograph Company, Limited, Lower Sydenham, London, S.E.26, for over 20 years, has been appointed technical representative for South-Eastern England.

MR. J. MORRIS, for many years manager of the Crewe Works of Rolls-Royce, Limited, has taken up an appointment as director of technical research and development with Sentinel (Shrewsbury), Limited.

MR. J. HATTERSLEY, hollow-ware manager of Harrison Bros. & Howson, cutlery manufacturers, of Sheffield, has received a presentation to mark the occasion of his retirement after 55 years' service with the company.

LT.-COL. J. P. HUNT, managing director of the Hallamshire Steel & File Company, Limited, Sheffield, has received presentations from employees of the company to commemorate his year of office as Master Cutler.

MR. J. W. ANGLES, who retired recently from the post of Principal of Darlington Technical College, has received a presentation from 10 local industrial firms in recognition of his work for the education of engineering students.

MR. ARTHUR H. JOHNSON has been appointed chairman of Musgrave & Company, Limited, fan and structural engineers, of Belfast. MR. T. H. ECCLES has been appointed manager of the London office of the company.

MR. ANDREW BLYTH recently resigned his position as sales manager of High Duty Alloys, Limited, Slough, on being appointed general manager with William Mills, Limited, aluminium alloy founders, Wednesbury, Staffs.

MR. THOMAS MILLER has resigned his appointment as managing director of the Ailsa Shipbuilding Company, Limited, Troon. The directors have appointed MR. JAMES TURNBULL, formerly shipyard manager, to be general manager of the company.

PROF. P. M. S. BLACKETT, who was recently awarded the Nobel Prize for his work in atomic research, is to receive from the Manchester Literary and Philosophical Society the Dalton Medal, in recognition of his distinguished contribution to the advancement of physics.

CAPT. JOHN MUIR DONALDSON has been elected to honorary membership of the Institution of Electrical Engineers for his distinguished contributions to electrical power engineering, particularly in the fields of generation, transmission, and distribution; and for his services to the Institution.

MR. DUNCAN BAILEY, who has resigned his position as joint managing director of Charles Roberts & Company, Limited, ironfounders, manufacturers of rail and road vehicles, etc., of Horbury Junction, near Wakefield, is to retain the chairmanship of the company. MR. RUSSELL BAILEY has been appointed managing director.

MR. F. W. DUGDALE, managing director of S. P. Austin & Son, Limited, Sunderland, was entertained at dinner by officials and staff of the company recently to mark his election as president of the Shipbuilding Employers' Federation. A similar dinner was given 30 years ago, when Mr. Dugdale's father, Mr. W. H. Dugdale, was president of the Federation.

MR. A. M. BAER, who has been appointed a member of the Eastern Gas Board, is chairman of H. J. Enthoven & Sons, Limited, lead smelters and refiners and metal merchants, of West Croydon, and a director of Henry Gardner & Company, Limited, metal merchants, etc., of London, E.C.3, the Amalgamated Metal Corporation, Limited, and the British Metal Corporation, Limited.

MR. E. S. WADDINGTON, of the industrial department of Philips Electrical, Limited, has been elected president, for 1949, of the Society of Engineers (Incorporated), of which he has been a vice-president for some years. Mr. Waddington is also a member of the Council of the Institute of Welding, as well as vice-chairman of the Finance Committee, while he is a member of the Council of the Sheet and Strip Metal Users' Technical Association.

MR. R. BROOKS, who retires from the service of the Metropolitan-Vickers Electrical Company, Limited, on January 31, has relinquished his position of chief engineer, control department. He has been at Trafford Park since 1918. He became chief engineer of the switchgear engineering department in the following year. Shortly afterwards, he was appointed chief engineer of the newly formed traction control department and for more than 20 years he was associated with many large railway electrification contracts. During this period his responsibilities were increased by the addition first of the railway signals, heating elements, and train-lighting sections and finally of the new radar engineering section set up before the war (this later became a separate department). Since 1941 Mr. Brooks has held the additional position of chief engineer, industrial control department, this incorporating also electronic control. MR. W. T. GRAY has been appointed chief engineer of the traction control department (including the railway signals and heating elements sections). He joined Metropolitan-Vickers in 1920. From 1930 onwards he acted as deputy to the chief engineer of the traction control department, and he has been associated with many important traction contracts. He was appointed assistant chief engineer in 1945. MR. G. L. NEWMAN, who has been appointed chief engineer, industrial control (including electronic control), joined the traction control department and was, in 1926, appointed engineer-in-charge of the railway signal section. In 1936 he took over the projector section and in 1945 he became engineer-in-charge of the newly formed electronic control department. At the end of 1946 Mr. Newman received the additional appointment of assistant chief engineer, industrial control department. MR. A. D. FERGUSON and MR. C. M. SAYER have been appointed assistant chief engineers of the traction control and industrial control departments, respectively, while MR. S. A. GHALIB has become engineer-in-charge, electronic control.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained. Details of tenders with the reference E.P.D. or C.R.E. can be obtained from the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1.

BEBINGTON, February 14—Iron castings and miscellaneous wrought iron, etc., for the Borough Council. Mr. L. Birch, borough engineer and surveyor, Brackenwood, Bebington, Wirral.

DEWSBURY, February 9—Iron castings, steel reinforcements, etc., for the Corporation. The Borough Engineer, Municipal Buildings, Halifax Road, Dewsbury.

DORCHESTER, February 12—Traffic signs and iron castings, including gully grates and frames, etc., for the County Council. The County Surveyor, County Hall, Dorchester.

FELIXSTOWE, February 5—Supply of castings, etc., for the Urban District Council. Mr. A. H. Pavitt, engineer and surveyor, Town Hall, Felixstowe.

FRIMLEY AND CAMBERLEY, February 14—Supply of cast-iron goods, for the Urban District Council. The Engineer and Surveyor, Municipal Buildings, London Road, Camberley.

HAVERFORDWEST, February 9—Cast-iron gully gratings and frames, for the County Council. Mr. W. Brundan, county surveyor, South Wales Hotel, Neyland.

HUYTON-WITH-ROBY, February 5—Supply of cast-iron manhole covers and gully grates, etc., for the Urban District Council. Mr. H. K. Pilkington, engineer and surveyor, Council Offices, Huyton-with-Roby.

KIDDERMINSTER, February 19—Cast iron, for the Borough Council. The Borough Engineer and Surveyor, 110, Mill Street, Kidderminster.

LINCOLN, February 5—Cast-iron manhole covers and gully gratings, for the Corporation. The City Engineer and Surveyor, Silver Street, Lincoln.

LONDON, W., February 7—Sewer ironwork, for the St. Marylebone Borough Council. The Town Clerk, St. Marylebone Borough Council, Room 33, Town Hall, St. Marylebone, London, W.1.

MANSFIELD, February 9—Castings, etc., for the Borough Council. Mr. E. T. Crowe, borough engineer and surveyor, Carr Bank, Mansfield.

PONTYPRIDD AND RHONDDA, February 21—Provision and laying of about 1,600 yds. of 14-in. and 4,400 yds. of 12-in. class D spun cast-iron pipes, etc., for the Joint Water Board. Thomas & Morgan & Partners, consulting engineers, 23, Gelliwastad Road, Pontypridd. (Fee £5 5s., returnable.)

SOUTH AFRICA, March 18—Supply of bare copper wire, insulated copper wire, galvanised stay wire, galvanised stay rods, crossarms (square tubular galvanised), steel poles, etc., for the City of Durban Electricity Department. (Reference: E.P.D. 55307/48; Room 1095.)

Recent Shipbuilding Orders

The following are among shipbuilding orders recently announced:—

GREENOCK DOCKYARD COMPANY, LIMITED, a motor tanker of 16,500 tons dw. for Norwegian owners.

VICKERS-ARMSTRONGS, LIMITED, Walker-on-Tyne, a motor tanker of 24,500 tons dw. for Norwegian owners.

FIRE, which broke out on January 12 in the pattern-shop of Aurora Gearing Company (Wilmot North), Limited, Sheffield, and destroyed hundreds of patterns, did not interfere with production, as work was continued manually until damaged machinery could be repaired or replaced.

Proposals for Easing Taxation Burden

Submitted to Chancellor

The Association of British Chambers of Commerce has submitted a memorandum to the Chancellor of the Exchequer expressing the views of its members on national financial policy, and suggesting methods which the Chancellor might consider when framing his Budget for easing the burden of taxation. The Association refers to Government expenditure, which it states is more than the nation can afford at the present volume of production, and looks for relief from the repressive effect of excessive taxation primarily from a substantial reduction of Government expenditure.

The Association believes that Parliament should appoint a committee to report on the economic consequences of the present financial policy, covering the problem of waste in administration and the amount of the national income which could be spent on social services without inviting inflation. The report would be published, and the acceptance or rejection of the recommendations would rest with Parliament.

It is also suggested that the definition of profits subject to income tax and profits tax should be modified to recognise the permanent increase in the level of prices since before the war. The profits tax should cease to be levied on undistributed profits and so far as it was levied on distributed profits it should be confined to dividends on the equity shares. The stamp tax on bonus issues of shares should be repealed.

Research Fellowship in Extraction Metallurgy

Later Closing Date

The date for the receipt of applications for the Nuffield Foundation Research Fellowship in Extraction Metallurgy has been put forward to March 31, 1949. The Fellowship will be tenable at the Royal School of Mines, London, for a period of up to five years, and the funds available are sufficient to provide a salary of from £1,200 to £1,500 per annum for the Fellow, as well as some £2,500 per annum for assistants and apparatus. Applicants should have had experience in the initiation and development of research, preferably in industrial research establishments, and must put forward an outline of the research which they propose to undertake. No conditions are laid down regarding the nature of the research, provided that it is concerned with extraction metallurgy, but preference will be given to a candidate who proposes to study some problem bearing on the basic scientific principles of metal extraction.

Applications, giving details of the candidate's qualifications and experience, the names of three referees, and an outline programme of research, should be sent to the Secretary, Institution of Mining and Metallurgy, Salisbury House, London, E.C.2.

News in Brief

PALMERS HEBBURN COMPANY, LIMITED, Hebburn-on-Tyne, has received the contract to overhaul the 8,000-ton cable repair ship Monarch, owned by the G.P.O.

OWING TO a greatly increased demand for their products, John Davis & Son (Derby), Limited, manufacturers of mining and scientific apparatus, has had to erect a new non-ferrous foundry.

THE MINISTER OF CIVIL AVIATION has announced that Elmdon airport, between Birmingham and Coventry, is to be linked with Paris by a regular daily service operated jointly by British European Airways and Air France.

A SPECIAL AWARD of £200 is offered to whoever of the 30,000 employees of Joseph Lucas, Limited, Birmingham, makes the best suggestion for increasing the company's exports. It is an extension of a workers' suggestion scheme which has operated since 1923.

A NEW OUTPUT RECORD was achieved recently at the plate mills of the South Durham Steel & Iron Company, Limited, Middlesbrough. The previous weekly record, established three months ago, was beaten with an output of 5,150 tons of sheared plates. The slabbing mill also attained record figures.

EAST POOL & AGAR, LIMITED, tin, wolfram and copper miners, of Carn Brea, Cornwall, announces that a meeting will be called before March 31 and a resolution submitted to put the company into liquidation. It is regretted that there does not appear to be any possibility of making a return to members.

IN ACCORDANCE with an Order made by the Court pursuant to Section 165 (*a*) (ii) of the Companies Act, 1948, the Board of Trade has appointed Sir Douglas Thornbury Garrett, of Parker Garrett & Company, St. Michael's Rectory, Cornhill, London, E.C.3, to act as inspector to investigate the affairs of A. Reyrolle & Company, Limited, manufacturing electrical engineers, of Hebburn-on-Tyne.

S. G. BROWN, LIMITED, Watford, manufacturers of the Brown gyro compass and other equipment, has acquired the Submarine Signal Company (London), Limited, Artillery Row, S.W.1, manufacturers of "Fathometer" echo-sounding gear. The Submarine Signal Company is to operate under its present name, and the association with S. G. Brown, Limited, will augment the existing service and maintenance arrangements.

DAMAGES OF £2,750 were awarded to Malcolm M'Leod, 20-year-old apprentice coppersmith, in an action in Glasgow Court of Session in which he sued the Lancefield Foundry Company, Limited, Glasgow, for payment of £4,000 in respect of personal injuries. M'Leod was employed by the defenders to feed copper tubing between the rollers of the rolling machine at their premises and on January 28, 1947, the fingers of his right hand were caught by the rollers and his right arm was pulled into the machine, with the result that it had to be amputated.

WILLIAM DOXFORD & SONS, LIMITED, Sunderland, is embarking upon a major reorganisation scheme involving an increased use of welding in ship construction which will lead to more efficient and speedier production. New large sheds where welding can be undertaken are to be built and a considerable amount of new plant is to be installed. A welding network is to be fitted into the shipbuilding berths to enable welding machines to be plugged in at any point.

NEGOTIATIONS ARE PROCEEDING for the transfer of the Clydeside shipyard of Napier & Millar at Old Kilpatrick, closed down 20 years ago, to Arnott, Young & Company (Shipbreakers), Limited, Dalmuir. Although stated to be only a "small expansion," with no great increase in the number of men employed, the new yard is expected to aid greatly the company's work of reducing ships to scrap, as the wet basin at Dalmuir can be used only for breaking up vessels as far as the waterline.

LONDON TRANSPORT EXECUTIVE has placed an order for 90 lightweight underground traincars made of aluminium alloy. They will be the first lightweight rolling stock to be run in Britain, while they will also be the first trains to be made of aluminium alloy. The cost of the trains will be about £1,250,000. The coaches will be made by the Metropolitan-Cammell Carriage & Wagon Company, Limited, at Saltley, Birmingham, which is collaborating with the Metals Division of Imperial Chemical Industries, Limited, Witton, Birmingham, on the aluminium alloy.

IN THE DISPUTE over the ownership of a rich lead ore seam discovered by Mr. Charles Frederick Upton, quarryman, in the limestone quarry of his employers, Browne & Shaw, Limited, Wirksworth (Mr. Upton and his employers had entered High Court writs against each other and the case was expected to be heard at Derbyshire Assizes in June), both parties have been informed by the Duchy of Lancaster that their claims to the lead ore have been forfeited. The Duchy, which has a prior claim on all lead mined in this area, holds that both parties have forfeited claims to ownership because lead ore has been removed before there has been any valuation of the mine. It is understood that one aspect of the dispute—ownership of about £1,200 from the sale of lead already mined—will go before the High Court.

Blast-furnace Orders for Stockton Company

Receipt of two blast-furnace contracts is announced by Ashmore, Benson, Pease & Company, Limited, Stockton-on-Tees. One contract, for the Polish Government, is for equipment for a furnace designed by Ashmore's American associates, the Freyn Engineering Company, while the other is for the rebuilding of the No. 1 furnace of the Cargo Fleet Iron Company, Limited. This will be the second furnace at this plant to be modernised, and the work forms part of the overall plan for the extension of the British steel industry.

In the period 1929-48, Ashmore, Benson, Pease & Company completed 13 blast furnaces at home, five in Africa, and two in Turkey. At the present time the company has five blast-furnace contracts in hand for the United Kingdom and three for abroad.

Obituary

MR. ROBERT KIDSTON, late of the Carron Company, Falkirk, died suddenly on January 9.

SIR BERTRAM RUMBLE, chairman of Fullers' Earth Union, Limited, Redhill, Surrey, and a director of other companies, has died at the age of 74.

MR. ALBERT EDWARD WOOD, who died on January 15 after a brief illness, was chairman and managing director of Hutchinson, Hollingworth & Company, Limited, textile engineers, ironfounders, etc., of Dobcross, near Oldham.

SENATOR C. P. BEAUBIEN, a director of the Dominion Steel & Coal Corporation, Limited, Sydney, N.S., and the Canadian Car & Foundry Company, Limited, Montreal, and other companies, died at his home in Montreal on January 17. He was 78.

MR. BERNARD W. METHLEY, who died on January 14 at the age of 72, was on the staff of Steel, Peech & Tozer for 46 years, and when he retired from the position of chief chemist in 1947, he became a consultant to the research and development department of the parent firm, United Steel Companies, Limited. He was a past-president of the South Yorkshire and North Midland section of the Royal Institute of Chemistry, a Fellow of the Institution of Metallurgists, and a member of the Iron and Steel Institute and the Sheffield Metallurgical Association.

MR. ARCHIBALD POWRIE, Lord Provost of Dundee, who had been associated with the shipbuilding of the port for 50 years, died on January 12 after an illness which had lasted for about five weeks. He was 64. The Lord Provost began his career, at the age of 14, with Gourlay Bros. & Company, Limited, and when the yard closed in 1908, he went to Monfalcone to give instruction in ship construction. On his return he joined the Caledon Shipbuilding & Engineering Company, Limited, as a plater, retiring last year. He became an official of the Boilermakers' Society in 1905, and he was a member of Dundee Harbour Board; early last year he was appointed a member of the North of Scotland Hydro-electric Board. Mr. Powrie received the O.B.E. shortly after the 1939-45 war in recognition of his public services.

MR. WALTER HENRY PURNELL, chairman of Herbert Morris, Limited, manufacturers of cranes, conveyors, boilers, etc., of Loughborough, died on January 18. Born in 1869, he got his early engineering training in Cardiff, and after a few years with a firm of agricultural engineers in Southern Ireland he joined Herbert Morris, Limited, in 1899. In 1908 he became a director of the company, in 1920 its vice-chairman and in 1931 he succeeded the late Mr. Herbert Morris as chairman. Mr. Purnell also interested himself over a wide range of local public affairs. He was a County Justice of the Peace for many years and a governor of both Loughborough College and Loughborough Hospital. He was also a veteran member of the Institution of Mechanical Engineers. One of his sons, Mr. H. G. Purnell, is a director of Herbert Morris, Limited.

Recent Wills

ROCK, WILLIAM, a director of the Standard Engineering Company, Limited, Leicester £6,276

KELLY, J. J., a director of Kelly & Cleaver, Limited, ironfounders, etc., of Walworth, London, S.E.17 £3,602

SELVEY, W. M., of Walton-on-Thames, consulting engineer, president of the Institute of Fuel, 1941-43 ... ... £14,606

STRATFORD, FRANK, secretary and a director of John Bedford & Sons, Limited, steel and tool makers, of Sheffield £5,128

BUTLER, J. F., managing director of the British Reinforced Concrete Engineering Company, Limited, Stafford £44,706

VARLEY, HARRY, former organising secretary of the Chesterfield branch of the National Union of Foundry Workers £3,643

CLARK, WILLIAM, a director of Eastern Smelting Company, Limited, of Gresham Street, London, E.C.2, and other companies £280,234

GARCKE, S. E., chairman of Dennis Bros., Limited, commercial motor manufacturers, etc., of Guildford, Surrey, and a director of other companies £258,627

HENRY, J. W., of Porthcawl, Glam, formerly a consulting marine engineer at Cardiff, a fellow and founder member of the Society of Consulting Engineers and Ship Surveyors £7,803

TAYLOR, COMM. J., consulting marine engineer, of London, formerly assistant manager of the Cleland Slipway & Engineering Company, Limited (now Clelands (Successors), Limited), Wallsend £26,189

Increases of Capital

Details of increased capital have been announced by the following companies:—

GUY MORRISON & COMPANY, LIMITED, manufacturers of electrical and mechanical appliances, etc., of London, W.C.1, increased by £4,000, in £1 ordinary shares, beyond the registered capital of £1,000.

A. H. WESTBURY, LIMITED, manufacturers of gas, water and steam pipes and fittings, etc., of Wednesbury, increased by £1,000, in £1 redeemable 5½ per cent. cumulative preference shares, beyond the registered capital of £1,000.

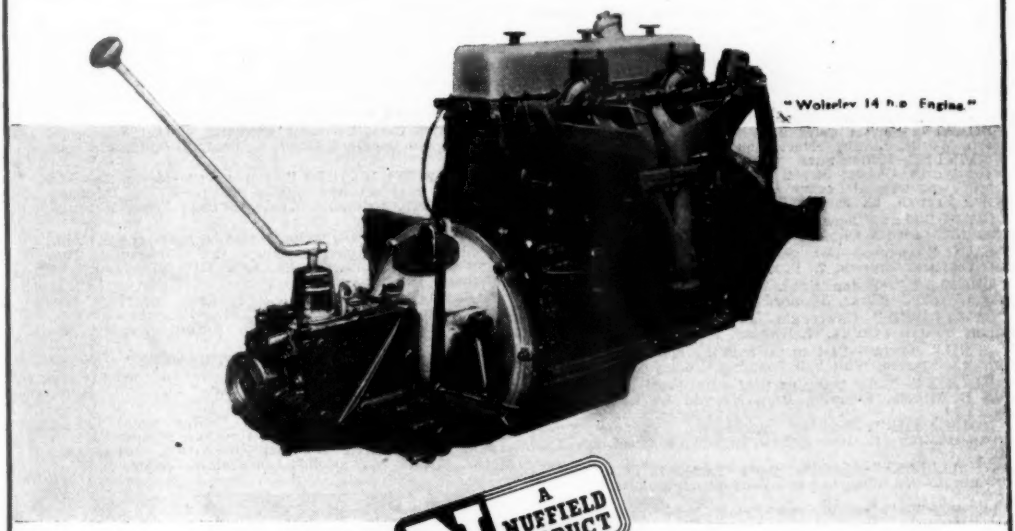
CAMPBELL & ISHERWOOD, LIMITED, electrical and mechanical engineers, etc., of Bootle, Liverpool, increased by £400,000, in 150,000 ordinary and 250,000 5 per cent. cumulative preference shares of £1 each, beyond the registered capital of £55,000.

WARNE, WRIGHT & ROWLAND, LIMITED, manufacturers of screws, nuts, tools, etc., of Birmingham, increased by £200,000, in 1,000,000 ordinary shares of 2s. and 100,000 5 per cent. cumulative preference shares of £1 each, beyond the registered capital of £100,000.

RHODES, BRYDON & YOUATT, LIMITED (originally Rhodes, Cochrane & Company, Limited, renamed Rhodes Brydon & Company, Limited), engineers, machinists, etc., of Stockport, increased by £10,000, in £1 ordinary shares, beyond the registered capital of £20,000.

STANHAY (ASHFORD), LIMITED, manufacturers of agricultural machinery, etc., of Ashford, Kent, increased by £174,900, in 499,500 ordinary shares of 4s. each and 75,000 5½ per cent. redeemable cumulative preference shares of £1 each, beyond the registered capital of £100.

THE 75TH ANNIVERSARY of the founding of Falkirk branch of the Patternmakers' Association was marked recently by a dance at the Plough Hotel, Earbert. During the evening Mr. W. B. Baird, general secretary, presented brochures telling the life-story of patternmaking from the year 1872 until 1947, to members with 25 or more years' service.



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New Trade Marks

The following applications to register trade marks appear in the "Trade Marks Journal":—

"FLINDUMIN"—Metal chains. GEORGE FLINN, LIMITED, 3, Eagle Street, Holborn, London, W.C.1.

"PICKWIK"—Folding metal furniture. SIDNEY REUBEN, 35, Seymour Court, Crest Road, London, N.W.2.

"MOON" (DEVICE)—Sheet-metal working machinery. MOON BROS., LIMITED, Beaufort Road, Birkenhead.

"DOMAIN"—Metal gates and railings. DOMAIN COMPANY, Domain Works, Barnby Street, London, N.W.1.

"BATTLE"—Hollow-ware. G. W. PEARCE & SONS, LIMITED, London Works, Chester Street, Aston, Birmingham, 6.

"VA" (DEVICE)—Air compressors and spraying machines. VANAIR, LIMITED, 83, Scrubs Lane, London, N.W.10.

"CITEX"—Lawn mowers and parts. CITY ENGINEERING (TIVIDALE), LIMITED, City Road, Tividale, Tipton, Staffs.

"LATIL" (DEVICE)—Gas generating plant. LATIL INDUSTRIAL VEHICLES, LIMITED, 7, Fitzroy Square, London, W.1.

"DUAFLEX"—Piston rings. WELLWORTHY PISTON RINGS, LIMITED, Radial Works, Stanford Road, Lymington, Hants.

"CAVILDISED"—Unwrought and partly wrought aluminium. WILLIAM CAVILL, 47, Hillway, Highgate, London, N.6.

"DAND" (DEVICE)—Cast metal building materials. DUDLEY & DOWELL, LIMITED, Whitehall Foundry, Cradley Heath, Staffs.

"MINMIL"—Tanks being parts of water-heating apparatus. JAMES B. MILNER, Stanway, Bryn Newydd West, Prestatyn, Flints.

"WALLASTAR"—Bundling machines. TORONTO STAR, LIMITED, c/o Raworth, Moss & Cook, 75, Victoria Street, London, S.W.1.

"NICRALISED"—Machine parts included in Class 7. SCOTT MOTORS (SALTAIRE), LIMITED, Hirst Wood, Saltaire, Shipley, Yorks.

"FAIREY" (WING DEVICE)—Metal locks and latches. FAIREY AVIATION COMPANY, LIMITED, North Hyde Road, Hayes, Middx.

"ANODURE"—Woven wire gauze, etc. THOMAS LOCKER & COMPANY, LIMITED, Ellesmere Wire Works, Church Street, Warrington.

"SYNCRO PRINT"—Aluminium foil and metal sealing caps. EMPIRE ALUMINIUM COMPANY, LIMITED, 204, Polmadie Road, Glasgow, S.2.

"ABRITUBE" (DEVICE)—Band-sawing machines. C. ABREY & COMPANY, LIMITED, Victoria Works, Edgware Road, Cricklewood, London, N.W.2.

"NEVEN"—Machines incuded in Class 7, machine tools, etc. IMPREGNATED DIAMOND PRODUCTS, LIMITED, 5-7, Kingston Buildings, Bath, Som.

"PH-ENTEX"—Bottle-washing and filling machines, etc. PH-ENTEX PRODUCTS, LIMITED, 518, Ipswich Road, Trading Estate, Slough, Bucks.

"FOTOLAC"—Metal nameplates and signs. RUSHTON ORGANISATION, LIMITED, 173, Clarence Gate Gardens, Glentworth Street, London, N.W.1.

"GORTA"—Machines included in Class 7 and machine tools, etc. PRESSTOVS, LIMITED, Eagle Wharf, 144a, Royal College Street, London, N.W.1.

"FORCO"—Laundry and dry-cleaning machinery. D. S. FORDYCE & COMPANY, LIMITED, 124, Finsbury Pavement House, Moorgate, London, E.C.2.

"SHEMTEC"—Machine tools, couplings, and belting, etc. SHEET METAL TECHNICIANS, LIMITED, Atlas Works, Briggate, Windhill, Shipley, Yorks.

"OCEAN"—Gear boxes for land vehicles. ASSOCIATED BRITISH OIL ENGINES, LIMITED, Duke's Court, 32, Duke Street, St. James's, London, S.W.1.

"BROLUBE"—Machine bearings, bushings, etc. BOUND BROOK OIL-LESS BEARING COMPANY, c/o Marks & Clerk, 57 and 58, Lincoln's Inn Fields, London, W.C.2.

"DURAMAX"—Fittings and component parts for internal combustion engines, etc. DURAMAX, LIMITED, Marlborough Works, Marlborough Road, London, N.19.

"BITUMETAL" AND DEVICE—Metal sheets for roofing purposes. WILLIAM BRIGGS & SONS, LIMITED, Camperdown Refinery, East Camperdown Street, Dundee.

"PREMADOR" AND "SUPADOR"—Spanners, ratchets, wrenches, etc. BLASEBALK ENGINEERING, LIMITED, 26-30, Shepperton Road, Islington, London, N.1.

"ALWINTITE"—Metal windows and frames. ALUMINIUM WINDOW CORPORATION, c/o Stevens, Langner, Parry & Rollinson, 5-9, Quality Court, Chancery Lane, London, W.C.2.

"SUPERDRAULIC"—Hydraulic pumps, motors, etc. SUPERDRAULIC CORPORATION, c/o Stevens, Langner, Parry & Rollinson, 5-9, Quality Court, Chancery Lane, London, W.C.2.

"ALCAN"—Aluminium and aluminium alloys. ALUMINIUM COMPANY OF CANADA, LIMITED, c/o Stevens, Langer, Parry & Rollinson, 5-9, Quality Court, Chancery Lane, London, W.C.2.

"ELECTRITE"—Grinding wheels (parts of machines), files, etc. UNITED CARBORUNDUM & ELECTRITE WORKS, NATIONAL CORPORATION, c/o Reddie & Grose, 6, Bream's Buildings, London, E.C.4.

"MR. SIEVE-WRIGHT" AND DEVICE—Sieves (machines), screening machines and sifting machines. N. GREENING & SONS, LIMITED, Britannia Works, Bewsey Road, Warrington, Lancs.

"BTG" (DEVICE)—Cutting tools, arbor presses, milling machines and spraying machines, etc. BIRMINGHAM TOOL & GAUGE COMPANY, LIMITED, 220, Soho Hill, Handsworth, Birmingham, 19.

"'SELLARC'"—Greasing, lubricating, spraying, drying, brushing and washing machinery, etc. EXCELARC ENGINEERING COMPANY, LIMITED, Webber Road, Kirkby Trading Estate, Kirkby, near Liverpool.

"GENIMEC INGENIOUS MECHANISM" (DEVICE)—Machine tools, agricultural implements and machines and parts thereof. ALLMAN PATENTS, LIMITED, "Elmstead," Birdham Road, Chichester, Sussex.

"MONOTYPE"—Apparatus for feeding metal ingots to the melting pots of type-casting, type-line, type-lead and rule-casting machines, etc. MONOTYPE CORPORATION, LIMITED, Queens House, 55 and 56, Lincoln's Inn Fields, London, W.C.2.

Leigh & Sillavan, Limited

Leigh & Sillavan, Limited, iron and steel agents, etc., of Manchester, at the end of last year completed 75 years of existence, having been founded in the year 1873 by the late Mr. James Leigh and the late Mr. George Sillavan. The partnership was converted into a private limited company in 1917. It is believed, although there are no records existing to prove the fact, that the original partnership began somewhat earlier than 1873 and that at the outset the late Mr. George Bradshaw, who later founded the firm of George Bradshaw & Company, Limited, was also associated in the partnership.

This partnership must, however, have ceased to exist before Leigh & Sillavan began its existence, but by an interesting and unforeseen turn of events Leigh & Sillavan, Limited, has now absorbed the old company of George Bradshaw & Company, Limited, so that once again the names of the three original partners are associated.

B.I.S.F. Re-elects Officers

Sir Ellis Hunter has been re-elected president of the British Iron and Steel Federation for the forthcoming year. He is chairman and managing director of Dorman, Long & Company, Limited. Mr. G. H. Latham, chairman and managing director of the Whitehead Iron & Steel Company, Limited, has been reappointed to the office of past-president, while Mr. N. H. Rollason, managing director of John Summers & Sons, Limited, will again serve as president-elect.

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Raw Material Markets

Iron and Steel

Distribution of pig-iron supplies is governed by a rigid system of rationing, but foundrymen claim that they often find it difficult to obtain their authorised quantities. This is all the more serious because everywhere stocks are negligible and consumers are working on a hand-to-mouth basis. Supplies of high-phosphorus iron have hitherto been most stringent, but since the turn of the year attention has also been directed to the growing scarcity of hematite, which involves the engineering foundries in difficulties arising from the necessary change in cupola mixtures.

The position in regard to the flow of material to the re-rolling mills is a little easier. The need for more small square and flat billets is emphasised and the flow of sheet bars is seldom wholly adequate, but in the aggregate, supplies are on a somewhat better scale. Home-produced heavy billets, blooms and slabs are more plentiful and there are definite hopes of a further expansion of imports from Belgium and Luxemburg.

Steel and coal are among the chief bargaining counters in the negotiation of bilateral trade agreements, and as more of these pacts are concluded, so must more material be diverted overseas. The position generally is so tight that the control over home distribution threatens to become even stricter. The carry-over of uncompleted tonnages from one period to the next is being most sternly discouraged. Bigger outputs should ultimately ease the situation, but at the moment few of the mills are able to take on further commitments. Sheets and plates are in the heaviest demand, but railway requirements also are very heavy and there is a vast miscellaneous demand for sections, joists, channels and bars. Wire mills, too, are busily engaged and could probably increase their outputs if rods were more plentiful.

Non-ferrous Metals

Quiet conditions continue to characterise the non-ferrous metal market in Britain, but consumption is, on the whole, well maintained and if the present rate continues, 1949 looks like being a good year, although not perhaps equal to 1948. The same may be said of the United States, where during the year just closed domestic deliveries of copper amounted to 1,344,500 short tons, a relatively small reduction on 1947, which returned a figure of 1,383,600 short tons. U.S. production of blister copper for last year was, of course, a long way below this, being short of a million tons on the year. The difference was made up by imports from overseas. The December figures, as published by the U.S. Copper Institute, show the output of blister copper to be 64,088 short tons, as against 58,151 tons in November. The figure of 64,088 tons comprised 54,362 tons of virgin and 9,726 tons of secondary metal. Production of refined copper in December was 96,117 tons, a sharp drop from 112,779 tons in the previous month. Stocks of refined copper at December 31 were 96,080 tons, compared with 89,756 tons a month earlier. Domestic deliveries totalled 102,292 tons, against the revised figure for November of 99,655 tons. Reserves of zinc in the U.S.A. were down to 20,848 short tons at the end of the year, compared with 68,011 tons 12 months earlier. Production of zinc during December was 76,946 short tons, an improvement of nearly 6,000 tons on the previous month.

Scrap continues to be an important part of the raw material metal supply in the United Kingdom, and this is hardly surprising considering the exceptionally cheap price range in existence at present. Opinions differ over the actual trend of secondary metal values, and all that can be said at the moment is that values look remarkably steady. But any falling off in the overall tempo of trade in non-ferrous metals would almost certainly cause some downward adjustment of values, for merchants and dealers are in no mood to hold on to material to-day and the "producers" of scrap must take the best price obtainable. This, of course, applies equally to Government disposals, of which large quantities continue to come on offer from time to time and are apparently being taken up by the trade.

Steel Increase for Shipbuilders

An increase of 5 per cent. in the steel allocation to shipyards for the first quarter of this year was announced by Mr. Hector McNeil, Minister of State, speaking at Greenock last Friday. He said he could not guarantee that the 5 per cent. increase would necessarily apply for the remaining nine months of the year, but certainly for that period there would be a modest increase in steel available for shipyards.

THE ALUMINIUM BASCULE BRIDGE, which spans the junction between Hudson and Hendon Docks, Sunderland, has undergone successful heavy-load tests.

MR. C. K. F. HAGUE, managing director of Babcock & Wilcox, Limited, has been re-elected president of the Council of the British Engineers' Association. He is also a member of the Engineering Advisory Council of the Ministry of Supply and of the Council of the Institution of Mechanical Engineers. MR. K. FRASER, chairman and managing director of W. J. Fraser & Company, Limited, manufacturing chemical engineers, etc., of Dagenham, Essex, has been re-elected vice-president of the Association.

MR. CHARLES SAMUEL FRANKLIN, the radio pioneer, is to be the recipient of the twenty-seventh award of the Faraday Medal by the Council of the Institution of Electrical Engineers. Mr. Franklin, who was with the Marconi Wireless Telegraph Company, Limited, when he retired in 1935, receives the medal "for his distinguished work in radio engineering, and in particular his original studies of short-wave wireless transmitting and receiving circuits, and his invention of the beam aerial, through which the practical use of short-wave transmission paths for communication purposes was established."